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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,857	04/12/2004	Norihisa Naganuma	1448.1056	1803
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EXAMINER				
CHANG, AUDREY Y				
ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/821,857

Applicant(s)

NAGANUMA ET AL.

Examiner

Audrey Y. Chang

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 and 25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Remark

- This Office Action is in response to applicant's amendment filed on October 6, 2008, which has been entered into the file.
- By this amendment, the applicant has amended claims 1, 6, 11-13, has canceled claims 21-24 and has newly added claim 25.
- Claims 1-20 and 25 remain pending in this application.

Response to Amendment

1. The amendment filed October 6, 2008 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: claims 1, and 11-13 have been amended to include the phrase "a wavelength multiplexed light ... has a single-peaked beam profile". The specification fails to give a positive support for this feature. The specification completely fails to give any teachings concerning the "profile" of the beam. The drawing of the beam as shown in Figure 1 is only a "drawing" for the beam that cannot be relied upon to give positive support for the "profile" of the beam as "single-peaked" beam.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 1-20 and 25 are rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in

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the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The reasons for rejection based on the newly matters are set forth in the section "response to amendment" above.

4. **Claims 1-20 and 25 are rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification and the claims fail to teach how to make the wavelength multiplexed light to have a single-peaked beam profile. It is not clear if such single-peaked profile is an implicit result and property of a collimated beam or there is certain critical element or criterion needed for achieving such property.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1-9 and 11-20 and newly added claim 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Fukushima (PN. 5,805,759).**

Fukushima teaches an *optical device* that is comprised of an *optical filter* (6, Figures 4, and 7(C)) that is placed in the beam path of a *collimated light beam* (SP). **Fukushima** teaches that the optical

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filter comprises a first and a second portions (6D) that in between the two portions there is a *slit* (42) such that the center wavelength of the collimated light beam that passes through the filter is selected and the transmittance of the collimated light beam verses the wavelength characteristics changes as a function of the wavelength, (please see Figure 7(D)). Fukushima further teaches that the filter may be moved by a *driver* (32) in a direction that is *perpendicular* to the direction of the collimated light beam, (please see Figures 6-7, column 6, lines 54-55) such that different center of wavelength of the pass-band of the collimated light can be selected as the filter is moved in the direction perpendicular to the collimated light beam, (please see column 9, lines 29-44).

This reference has met all the limitations of the claims with the exception that it does not identify explicitly that the slit is a diffraction unit. However it is known in the art that a single slit having slit width that is *much greater* than the wavelength of the incident light beam will form *single slit diffraction unit* and a maximum diffraction peak or transmittance peak for the selected and diffracted light having the selected wavelength will be formed by this single slit diffraction. Since the Fukushima reference teaches that the wavelength interest is in the range of 1.5 microns, and the slits are of the macroscopic size this means it is implicitly true that the slit (42) does form a single slit diffraction unit and the transmittance of the light beam as shown in Figure 7(D) is a maximum diffraction peak. It is also obvious to one skilled in the art, if the slit is not of the size, to make the slit to have the size capable of making single slit diffraction unit for the benefit of making the transmittance filter via the slit of Fukushima utilizing diffraction theory to maximize the transmittance peak for the pass-band of the collimated light beam.

Claims 1, and 11-13 have been amended to include the phrase of including a collimator for collimating a wavelength multiplexed light such that the wavelength multiplexed light has a single-peaked beam profile. Fukushima teaches a fiber collimator (36, Figure 3) that collimates the wavelength multiplexed light beam. Fukushima further teaches that the beam expander (2, Figure 4) produces spectral beam that is collimated, (please see column 6, lines 24-34). This reference however does not

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teach explicitly that the wavelength multiplexed light has a single-peaked profile. However the specification fails to disclose such explicitly and fails to teach how to achieve such. This feature therefore is being examined as the implicit property of the collimated light beam. This feature is then being met by the disclosure of the collimator and collimated light beam of the reference of Fukushima.

Furthermore, Fukushima teaches that the light beam input from the optical fiber (16, Figure 4) must be a *wavelength multiplexed light beam*, the same way as the instant application, since the light beam comprised a plurality of wavelengths multiplexed together and it is collimated by the collimating lens (28) and the filter (6) is **placed in the light path of this light beam**. The wavelength multiplexed collimated light beam right after the lens (28) is not separated into respective wavelengths. Also by the definition of wavelength multiplexed beam, the beam is a combine signal of multiple sub-channels of different wavelength each carrying a signal at the same time in parallel. This means the even after the gratings (20 and 22, Figure 4) of Fukushima, the signal is **still** a *wavelength multiplexed signal* since it is a combination of sub-channels of different wavelength each carrying a signal at the same time in parallel.

It is implicitly true that the diffraction loss of the wavelength multiplex light varies as the movement of the diffraction unit or the slit.

With regard to claim 2, Fukushima teaches that the first and second filter portions are formed by plates (6D), although this reference does not teach explicitly that the portions are made by film, however since the same function, namely making these portions filter portions, is the same to make them by film or plates would have been obvious variations to one skilled in the art for the benefit of making the filter fits the specific design requirement.

With regard to claims 3-5 and 15-16, Fukushima teaches that a plurality of the optical filters (6, Figure 9) may be used wherein each of the optical filters is individually driven by the driver to move in the direction perpendicular to the direction of the collimated light beam. Fukushima teaches that each of the plurality of optical attenuation filters has specific slit patterns (please see Figures 5-7) and they are

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driven to provide specific transmittance characteristics, (please see Figures 10). The slits for different filters are implicitly arranged at certain angle with respect to each other since even if they are parallel to each other they are at angle zero with respect to each other.

With regard to claim 6, Fukushima in different embodiments teaches that a plurality of attenuate plates (6(#1) to 6(#4), Figure 9 could be used in the light path of the wavelength multiplex light beam. Although it does not teach explicitly that the attenuate plates have the same structure as Figure 7(C) with slit defined between two filter portions, however such modification is considered to be obvious to one skilled in the art for the benefit of obtaining desired wavelength characteristics by the optical filter.

With regard to claim 7, this reference does not teach explicitly that the driver is the types of driver claimed however these claimed drivers are all well known standard drivers in the art to use one of them would have been obvious modification to one skilled in the art for the benefit of effectively moving the optical filter as desired.

With regard to claim 8, it is implicitly true the different arrangements of the edges and slits for the attenuation optical filters result different wavelength characteristics.

With regard to claim 9, Fukushima teaches that the filter portion essentially has zero transmittance but it does not teach explicitly if they are reflection or not. However such modification does not change the function of the slit, which essentially provides transmitted diffraction beam. Furthermore, it is implicitly true that zero transmission can include non-zero reflection of the incident light and the reflection of the collimated light will be in the direction parallel to the collimation direction, by the principle of reflection.

With regard to claim 14, Fukushima teaches that the light attenuation filter region lines (ETL) with certain pitch as relative to the beam spot size (SP) is set to be less than one quarter of the beam spot size, (please see Figures 5-6). It would then have been obvious to make the grating structure of the

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attenuation optical filter with edges to have the pitch to be less than a quarter of the beam size for the benefit of enabling the attenuation filter to provide desired wavelength transmittance pattern.

With regard to newly added claims 17-20, Fukushima et al in different embodiment teaches that the first and second filter portion can have equal non-zero transmission with the diffraction portion defined by the edges of the first and second filter portions, (please see Figures 7(A) and 7(B)).

With regard to newly added claim 25, Fukushima teaches that the collimated light beam is directly input into the filter (6, please see column 6, lines 24-44).

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima as applied to claim 1 above, and further in view of the Japanese Patent (JP 10-253327 A) by Matsuno et al.

The variable filter taught by Fukushima as described in claim 1 above has met all the limitations of the claim.

With regard to claim 10, this reference does not teach explicitly that the filter is made by glass material and with film formed on the glass material to form the filter portion. Matsuno et al in the same field of endeavor teaches that an attenuation filter may be formed by thin film pin hole (14) on a glass substrate (13, Figures 2 and 3). It would then have been obvious to apply the teachings of Matsuno et al to modify the variable filter of Fukushima for the benefit of actually making the variable filter.

Double Patenting

8. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

9. Applicant is advised that should claim 1 be found allowable, claims 11 and 12 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Response to Arguments

10. Applicant's arguments filed October 6, 2008 have been fully considered but they are not persuasive. The newly amended and newly added claims have been fully considered and addressed, And they are rejected for the reasons stated above.

11. In response to applicant's arguments which state that the cited Fukushima reference "does not operate the same manner as the diffraction unit" recited in the claims, since "the spectral beam is beam in which wavelength components are separated spatially in the direction of thickness of the spectral beam" (please see remark), therefore the diffraction gratings function to demultiplex the beam the examiner respectfully disagrees for the reasons stated below. Firstly, it is not clear what is considered to be the "direction of the thickness of the beam". Secondly, the specification FAILS to give explicit support for the multiplexed beam is not demultiplexed. Thirdly, even if the light beam of Fukushima is spatially separated into sub-channels of different wavelength they are collimated, (please see column 6, line 44) which is explicitly the same as the claimed feature. Fourthly, the conditions of the **incident** light beam DOES NOT contribute any **structural difference** of the variable filter itself or differentiate the variable filter **structurally** between the cited patent and the instant application. Just as the applicant has correctly identified, the difference is really a difference of "**manner of operation**" of the variable filter, i.e. a difference in **intended use**. It has been held that a recitation with respect to the manner in which a claimed apparatus is **intended to be employed** does not differentiate the claimed apparatus from a prior

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art apparatus satisfying the claimed structural limitations. Ex parte Madham, 2 USPQ2d 1647 (1987).

Applicant is respectfully noted that the claims are drawn to the variable filter itself. The **condition** of the light beam being incident on the filter really has nothing to do with the structural of the filter. The applicant is encouraged to amend the claims to recite the **structural** of the variable filter itself instead how the filter is being utilized.

12. In response to applicant's arguments which state that the slit or the diffraction unit of the cited Fukushima only function as a window for passing the light beam as it moves which therefore differs from the instant application, the examiner respectfully disagrees for the reasons stated below. The claims are drawn to "diffraction loss" with respect to the wavelength characteristics. One skilled in the art must understand the slit (42) has 100% transmittance that is surrounded by 0% transmittance portions forms a single slit diffraction element for the incident light beam. The incident light beam will implicitly diffract the incident light when the wavelength of the light meets the diffraction equation defined by the single slit of the filter with slit (42). This will implicitly give a diffraction loss profile with respect to the wavelength characteristic of the light. The applicant is respectfully noted that the variable filter of the cited Fukushima reference has **exactly the same physical structure** as of the variable filter of the instant application. Applicant's arguments concerning the characteristics of *the incident light beam* and the *corresponding spectrum profile* really do not differentiate the variable filter **itself** from the prior art, since to **how** to use the variable filter, whether to use wavelength multiplexed light beam or not does not change the structure of the variable filter itself. This is like whether to shine a red light or a green light on a mirror, the light will always be reflected by the mirror. Just that the mirror will reflect a red light when the incident light is a red light and will reflect a green light when the incident light is green light. The mirror itself will not be changed by the color of the incident light. Furthermore, the resultant spectrum is not even part of the claims that cannot be relied upon to overcome the rejection. Since there is **no**

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claimed structure difference between the variable filters of the instant application and the cited Fukushima, the variable filter of the cited reference therefore reads on the variable filter of the claims.

13. In response to applicant's arguments which state that the claim 11 is **patentably** different from claim 1 by claiming an "optical amplifier", the examiner respectfully disagrees since the "optical amplifier" is only recited in the **preamble** and the body of the claim for claims 1 and 11 are identical this means the two claims are **not patentably distinct**. In response to applicant's argument which state that the cited claim 12 recites that the "moving unit moves the diffraction unit of the filter to a predetermined position **between** a center and an edge of the wavelength multiplexed light" that patentably differs from claim 1, the examiner respectfully disagrees for the reasons stated below. Claim 1 also recites "a moving unit that moves the diffraction unit to thereby change the transmittance versus wavelength characteristics of the filter". This means the diffraction unit has to be moved with respect to the wavelength multiplexed light beam, for otherwise no wavelength characteristics will present. And this movement certainly include predetermined positions between center and edge of the light beam. If the diffraction unit is moved outside the center and edge of the light beam, no filtering function will be resulted. Claim 12 therefore is not patentably different from claim 1.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (9:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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